

DEPARTMENT OF HEALTH AND HUMAN SERVICES  
Public Health Service  
Indian Health Service  
Rockville, Maryland 20857      Refer to: O E H E / E H S B

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INDIAN HEALTH SERVICE CIRCULAR NO. 94-2

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HAZARD COMMUNICATION PROGRAM

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1. PURPOSE. The Hazard Communication Standard (HCS), 29 Code of Federal Regulations (CFR), Subsection 1910.1200, established uniform requirements to make sure that the hazards of all chemicals produced, imported, or used within the United States are evaluated and that this hazard information is transmitted to effected employers and employees. This Standard covers any company that uses hazardous chemicals.

The Indian Health Service (IHS) Hazard Communication Program is designed to assist each service unit to more easily comply with the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard.

2. OBJECTIVES.
- A. To protect patients, visitors, and IHS personnel from exposure to hazardous materials while in an IHS facility.
  - B. To establish procedures for implementing a hazard communication program in an IHS facility.
  - C. To define responsibilities of IHS employees under the hazard communication program.
  - D. To comply with OSHA regulations 29 CFR, Subsection 1910.1200.

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3. SCOPE. This circular applies to all IHS employees, including those assigned to Public Law (P.L.) 93-638 facilities. The HCS and implementing regulations apply to Indian Self-Determination Act, P.L. 93-638, and Title V urban program contractors as employers. Tribal contractors are strongly encouraged to adopt this circular.
4. DEFINITIONS.
  - A. Chemical name - the-scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS), or a name that will clearly identify the chemical for the purpose of conducting a hazard evaluation.
  - B. Combustible liquid - any liquid having a flashpoint at or above 37.8 C (100 F) but below 93.3 C (200 F), except any mixture having components with flashpoints of 93.3 C (200 C) or higher, the total volume of which makes up 99 percent or more of the total volume of the mixture.
  - c. common name - any designation or identification such as code name, code number, trade name, brand name, or generic name used to identify a chemical other than by its chemical name.
  - D. Compressed gas - a gas that falls into one of the following categories:
    - (1) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 21.1 C (70 F).
    - (2) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 54.4 C (130 F) regardless of the pressure at 21.1 C (70 F).
    - (3) A liquid having a vapor pressure exceeding 40 psi at 37.8 C (100 F) as determined by American Society of Thermal Mechanics D-323-72.
  - E. Employee - any worker employed by the IHS including tribal employees, temporaries, contracted workers, repair and maintenance-personnel, and volunteers who may be exposed to hazardous chemicals under normal

operating conditions or foreseeable emergencies. Office workers are generally not included, unless their job performance routinely involves potential exposure to

F. Flammable - a chemical that falls into one of the following categories:

- (1) "Aerosol, flammable" is an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening.
- (2) "Gas, flammable" is a gas that at ambient temperature and pressure:
  - a. Forms a flammable mixture with air at a concentration of 13 percent by volume or less; or
  - b. Forms a range of flammable mixture with air wider than 12 percent of volume, regardless of the lower limit.
- (3) "Liquid, flammable" is any liquid having a flashpoint below 37.8 C (100 F), except any mixture having components with flashpoints of 37.8 C (100 F) or higher, the total of which makes up 99 percent or more of the total volume of the mixture.
- (4) "Solid, flammable" is a solid, other than a blasting agent or explosive, that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if it ignites and burns with a self-sustained flame at a rate greater than .254 cm (one-tenth of an inch) per second along its major axis.

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- G. Written Hazard Communication Plan - a detailed record of what a specific facility has done to comply with the OSHA Hazard Communication Standard. It must include a complete and thorough documentation of the program in place and will serve two purposes: (1) communication to your employees and (2) communication to OSHA, as to exactly what the service unit has done to comply with the Standard. This is a very important aspect of an OSHA inspection.
- H. Hazard Communication Standard - the set of regulations issued by OSHA designed to inform employees of the presence of hazardous chemicals in the work place and the methods to minimize exposure.
- I. Hazard Warning - any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical(s) in the container(s).
- J. Health Hazard - a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term health hazard includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on hemopoietic systems, and agents that damage the lungs, skin, eyes, or mucous membranes.
- K. Material Safety Data Sheet (MSDS) - the written or printed material concerning a hazardous chemical. The MSDS is prepared in accordance with OSHA's Hazard Communication Standard.
- L. Organic Peroxides - an organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.
- M. Other Qualified Individual - any individual with sufficient training or experience to serve as the Hazard Communication Officer. See Section 5.D. for a description of duties.

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- N. Oxidizer - a chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials thereby causing fire either of itself or through the release of oxygen or other gases.
  - O. Physical Hazard - a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water-reactive.
  - P. Specific Chemical Identity - the chemical name, Chemical Abstract Service Registry Number, or any other information that reveals the precise chemical designation of the substance.

## 5. RESPONSIBILITIES.

- A. Headquarters Technical Consultant On Hazard Communication. The Associate Director, Office of Environmental Health and Engineering (OEHE), or a designee, shall be the IHS technical consultant for control of hazardous chemical risks and will provide guidance, administrative support, and monitoring for compliance with the Hazard Communication Program.  
  
The Associate Director also serves as the official liaison between IHS and OSHA and is responsible for communicating with the Areas on any updates that may occur in the Hazard Communication Standard.
- B. Area Technical Consultant on Hazard Communication The Area Associate Director, OEHE, or designee, shall provide guidance, administrative support, and monitoring of implementation strategies to ensure that the service units develop hazard communication programs that are in compliance with OSHA regulations.
- C. Service Unit Director (SUD), Health Director. or P-L. 93-638 Program Director. The Director shall assume responsibility for compliance with 29 CFR 1910.1200 of all facilities and ensure that all department heads comply with the requirements of the service units Written Hazard Communication Plan. The Director must

designate in writing a Safety Officer, Environmental Health Specialist, or other qualified individual as the Hazard Communication Officer who will be responsible for many of the required activities.

- D. Hazard Communication Officer. The Hazard Communication Officer is responsible for implementing a hazard communication program. Any problems or noncompliance with the program must be reported to the Director. The following duties are the responsibility of the Officer:
- (1) Write or adapt the IHS Written Hazard Communication Plan.
  - (2) Ensure that safety orientations include a review of the service units Written Hazard Communication Plan.
  - (3) Conduct or arrange for periodic safety in-services on the hazard communication program for the entire service unit staff, especially after a major change in the workplace that involves the use of hazardous materials.
  - (4) Ensure that the service unit hazard surveillance program includes a semi-annual evaluation of hazardous materials and labeling, and determine if **the** proper safety precautions are being used in the facility when hazardous materials are present.
  - (5) Maintain a master inventory of all hazardous materials within the facility. Hazardous material data (chemical or common name) for the master inventory will be obtained from each department/service head and will be reviewed annually.
  - (6) Maintain a master file of all MSDSs within the facility. The MSDSs will be obtained from each department/service head.
  - (7) Be the point of contact for contractors working at the facility. Ensure all appropriate facility MSDSs are provided to the contractors for review.

- (8) Ensure-the facility is in compliance with the Community Right-to-Know" requirements as described in the Superfund Amendments Reauthorization Act, Title III, Section 311. (This may require the provision of MSDSs to the State, city, county, or tribal office as required.)

E. Department/Service Head. The department or service head is responsible for the implementation of the Written Hazard Communication Plan that pertains to the department. The following are duties to be performed by each department head:

- (1) Assemble a complete list of all chemicals used within his/her department's day-to-day operations. This includes cleaning supplies, such as bathroom cleansers and window cleaners and vendor samples being used on a trial basis. The list must be updated annually and a copy of the list given to the Hazard Communication Officer.
- (2) Develop a hazardous chemical inventory list by checking the above list against OSHA-designated lists; Environmental Protection Agency lists; Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment, American Conference of Governmental Industrial Hygienists; National Toxicology Program Annual Report on Carcinogens (latest edition); International Agency for Research on Cancer monographs; and OSHA's 29 CFR Part 1910, Subpart 2, or by reviewing the MSDS information sent by the manufacturer. Remove those chemicals that are not regulated and what remains will be the hazardous chemical inventory list. See Appendix E for a list of chemicals from some of the above sources.
- (3) Show the inventory list to any employee within the department who asks to see it.
- (4) Request MSDSs from the manufacturer/distributor for all hazardous materials within the department. There shall be an MSDS within the department for each hazardous material on the department's inventory list. A second MSDS shall be sent to

the Hazard Communication Officer. If a manufacturer/distributor does not send an MSDS to the facility then it is the responsibility of the department head to, discontinue using the product.

- (5) Show the Written Hazard Communication Plan to any employee within the department who asks to see it. A copy of the plan must be kept within every department.

F. Supervisors. All supervisors are responsible for the following:

- (1) Disseminating hazardous chemical information to the employees they supervise.
- (2) Providing information and training to those employees on the specific chemical hazards of their department and the appropriate precautions to take.
- (3) Conducting Departmental in-services on any precautions needed when working with a hazardous chemical, the hazards of chemicals contained in unlabeled pipes in the department, and the hazards of any nonroutine tasks.
- (4) Ordering equipment that is needed to properly handle any hazardous materials in their departments.

## 6. HAZARD COMMUNICATION PROGRAM.

- A. Written Plan. The Written Hazard Communication Plan is the written record of what the service unit will do to comply with the Hazard Communication Standard. Every step of compliance must be thoroughly documented for OSHA's inspection.

Service Unit Hazard Communication Officers shall develop and implement a Written Hazard Communication Plan for their workplaces that describes the criteria for labeling hazardous materials, collecting MSDSs for hazardous materials, developing an inventory of all hazardous materials inside the facility, and training new IHS personnel and the entire clinical staff on hazardous materials and any major changes concerning hazardous chemicals. The Written Hazard Communication Plan will include the following:



- (1) A list of the hazardous chemicals known to be present in the IHS facility using an identity that is referenced on the appropriate material safety sheet. A list should be compiled for each department and a master list should be compiled for the entire facility.
- (2) The methods the Hazard Communication Officer and department-heads will use to inform employees of the hazards of non-routine tasks and the hazards associated with chemicals contained in unlabeled pipes in their work areas.
- (3) The method the facility will use to inform any contractor working in an IHS hospital/clinic of the hazardous chemicals they may be exposed to while working within a particular department.

B. Labels and Other Forms of Warning.

All IHS department heads shall ensure that labels or other forms of warning are legible, written in English, and prominently displayed on the container or readily available in the work area throughout each shift.

Department heads are not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use by the employee who performs the transfer.

The IHS personnel shall not remove or deface existing labels on Incoming containers of hazardous chemicals, unless the transfer or secondary container is immediately marked with the required information.

C. Material Safety Data Sheet (MSDS).

Each Department Head shall request and maintain copies of required MSDSs for each hazardous chemical in the workplace, and shall ensure that they are readily accessible during each work shift to employees when they are in their work areas. A copy of each MSDS shall be sent to the Hazard Communication Officer.

The IHS warehouses that act as distributors of hazardous chemicals must provide copies of MSDSs for those products. The MSDSs are not required to be physically attached to a shipment, but they must accompany or precede the shipment. In cases where repetitive shipments are made to the same service unit, the initial shipment must provide an MSDS; subsequent shipments may provide an MSDS.

An MSDS should contain information on the following topics: chemical identity, hazardous ingredients, physical and chemical characteristics, physical hazards, health hazards, primary route(s) of entry, exposure limits, precautions for safe handling, control measures such as personnel protective equipment, emergency and first aid procedures, date of preparation of the MSDS, and a responsible party such as the manufacturer or importer.

Some MSDSs may be labeled "Proprietary Compound," which indicates a trade secret. The names of hazardous chemicals may be withheld under the HCS trade secret provisions if sufficient worker protection information is provided on the MSDS. Occupational health services professionals have the right to request full details on trade secret chemical identities under paragraph (i)(12) of the HCS, if the individual can demonstrate a "need-to-know" and if the information can be treated confidentially.

#### D. Employee Information and Training.

The Hazard Communication Officer shall provide all service unit employees with the following information at the time of their initial assignment:

- (1) The requirements of OSHA's Hazard Communication Standard including an explanation of the labeling system, the MSDS, and how employees can obtain and use the appropriate hazard information.
- (2) The location and availability of the written Hazard Communication Plan, including the required list(s) of hazardous chemicals, and MSDSs required by the Standard.

Each Supervisor or Department Head shall provide orientation training specific to their department, and shall inform new employees of the following :

- (1) Any operations in their work area where hazardous chemicals are present.
- (2) The physical and health hazards of the chemicals in the work area.
- (3) The physical and health hazards of new chemicals as they are introduced into the work area.
- (4) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (hazard surveillance, continuous monitoring devices, visual appearance or odors of hazardous chemicals when being released, etc).
- (5) The measures employees can take to protect themselves from these hazards, including specific procedures the Hazard Communication Officer or department head has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used.

There are some specific chemicals for which annual training is required by OSHA. Some examples of these chemicals are asbestos, formaldehyde, and ethylene oxide.

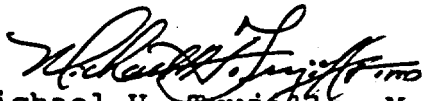
E. Surveillance.

There shall be semi-annual hazard surveillance of the facility to identify new hazardous materials introduced into the work place, determine if MSDSs have been ordered for hazardous materials, determine if all hazardous materials are properly labeled, and determine if employees in the work place are using the necessary safeguards to protect themselves from hazardous materials. The results of the surveillance will be documented and the SUD will be notified of any

noncompliance with the hazard communication program. This requirement is one facet of the facility's complete hazard surveillance program and should be done in conjunction with other safety requirements. See Indian Health Manual Part 1, Chapter 9, Occupational Safety and Health Program, for additional information on surveillance.

7. EFFECTIVE DATE.

This circular is effective upon date of signature. All IHS facilities shall comply with this circular immediately, including initial training for all current employees.

  
Michael H. Trujillo, M.D. . M.P.H.  
Director, Indian Health Service

# WRITTEN HAZARD COMMUNICATION PLAN

facility	name
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Please note: This written Hazard Communication Plan applies to all Indian Health Service (IHS) employees, including, those assigned to Public Law (P.L.) 93-638 facilities. The Hazard Communication Standard (HCS) and implementing regulations apply: to Indian Self-Determination Act, P.L. 93-638 and to Title V urban program contractors as employers.

## I. PURPOSE:

The purpose of the written Hazard Communication Plan is to ensure that the (1)  
hazards of all chemicals in this facility are evaluated, and  
that information concerning their hazards is conveyed to  
affected employers, and employees. This information is  
conveyed by means of a comprehensive hazard communication  
program, that includes:

- 1: Compiling a hazardous chemical inventory list.
2. Ensuring correct labels and other forms of warnings.
3. Maintaining .a file of material safety data sheets.
4. - Conducting employee training.

## II. BACKGROUND:

The HCS originates from the "Right to Know" law passed by the Congress in the 1980s. The Standard was first passed by the Occupational Safety and Health Administration (OSHA) in 1985 and originally covered 14 million workers in chemical manufacturing. There was demand

for broader coverage, however, and in 1987 OSHA expanded the Hazard Communication Standard to cover over 32 million workers in all companies. The Standard requires, all hazardous chemical containers to be labeled, and to provide buyers with material-safety data sheets for each chemical. Employers must train employees about any chemical, hazard which they may be reasonably expected to be exposed to in their work environment. Hazardous chemicals must be identified, their hazards known and a plan for their use and training developed.

### III. METHODS OF IMPLEMENTATION:

#### A: General

The \_\_\_\_\_<sup>(2)</sup> has used the IHS Hazard Communication Program circular in establishing a written Hazard Communication Plan. The Plan is the written record of what this facility has done to comply with the Hazard Communication Standard and documents the steps taken: labels and other forms of warning, hazardous, chemical inventories, material safety data sheets, employee information and training. It also identifies the people responsible for the program in this facility.

The Service Unit Director or Health Director is responsible for this facility's compliance and for ensuring that all department heads comply with the requirements of this Plan. The Director has appointed \_\_\_\_\_<sup>(3)</sup> as the Hazard Communication Officer who is responsible for many of the required activities as well as adapting this written Hazard Communication Plan to meet the needs of this facility.

#### B. Labels

A labeling system has been developed and implemented to ensure that all containers of hazardous chemicals are marked with the identity of the chemical, an appropriate **hazard warning**, and on shipped containers, the name and address of the manufacturer or other responsible party (e.g., importer or supplier).

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The "identity" is any chemical term or common name that appears on the label, the material data safety sheets (MSDS), and the list of hazardous chemicals, and is the link between these three sources of information.

The "hazard warning" is a brief statement of the hazardous effects of the chemical, but does not by law have to include precautionary statements or other information, i.e., a warning could say that it attacks the lungs but may not indicate that inhalation is the hazard.

Several materials that may be in use have specific health standards that include special handling methods and protective clothing, and may include specific label requirements. The substances in use here are. \_\_\_\_\_

e.g. asbestos, ethylene oxide, etc.) See Appendix B for more information.

Containers that are very small, such as vials or test tubes, or areas that have diffuse chemical emissions, such as welding, motor emissions, vehicle bay exhaust, and dental, clinic areas, are labeled using an alternative system. The alternative system in use here

(The facility may use signs, placards process sheets batch tickets, or other such-written material in place of a label.)". This alternative system identifies which container the label refers to and is available to employees at all times.

Department heads or their appointees are responsible for ensuring that labels or other forms of warning are in place on all incoming new containers. The manufacturer is legally responsible for labeling all chemicals but, once accepted, the facility is responsible for the labels. The department head will either refuse to accept an unlabeled container or relabel it in the department.

The Hazard Communication Officer is responsible for ensuring that the facility conducts spot checks every

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(6) months to see that hazardous chemical labels, are legible, written in English, and prominently displayed on the container. . When old containers labels corrode, fall -off, or become unreadable; they are relabeled. new label may be duplicated from an identical container or the department may come up with their own new label. See Appendix C for some samples of our labels.

Department heads or their appointees are responsible for updating label information as it is developed and for relabeling smaller containers when a large container needs to be broken down.

If the department finds old containers of chemicals that were purchased before these requirements went into effect ,the department-head will request label information from the manufacturer. If this is unsuccessful, the chemical will be disposed of.

#### Exemptions:

Portable containers that are filled from labeled containers are not required to be labeled, as long as they are intended only for the immediate use **by** the employee who performs the transfer of the chemical. Unless the one worker-can use the entire amount of the chemical in one work, shift, it must be labeled. A second worker must never, be given an unlabeled hazardous chemical. For simplicity, frequently used portable containers may be designated and labeled for one specific chemical and reused only with that chemical.

Labeling is not required for chemicals labeled under the Consumer Product Safety Act if an employee has the same degree of exposure as he/she would have at home. However, if the employee works with the chemical extensively, it is treated as a hazardous chemical.

### **C. List of Hazardous Materials**

A list was developed of all the hazardous materials present in this facility.



Department heads or their appointees first compiled a complete list of all the chemicals in their department. The list include all cleaning supplies; vendor samples, and chemicals used in day-to-day operations.

The Hazard Communication Officer ensure that each department developed hazardous chemical inventory lists in which all the chemicals were 'checked against OSHA-designated lists, EPA lists, Appendix E, or the material safety-data sheet information sent by the manufacturer to determine if they were hazardous. These are the chemicals for which the facility must have material safety data sheets. If the chemical was not designated as a hazardous chemical, it was removed from the inventory. The departmental lists are updated annually as new hazardous chemicals are added or eliminated. The lists are used for training workers in that department. They are found in each department and are available to any employee within the department upon request.

The Hazard Communication Officer maintains a master inventory list for the entire facility composed of each department's hazardous chemical list. The master list is provided to employees upon request.

Information concerning the chemical (where the chemical was used and for how long) is included on the list. This provides a simple way to comply with the OSHA regulation, Employee Access to Medical Records (29 CFR 1910.20) which says that facilities must keep information on discontinued chemicals for 30 years. Storing these lists takes up much less space than storing files of MSDS.

#### **D. Material Safety Data Sheets (MSDS)**

The MSDS is the method for transmitting a wide variety of information from the chemical manufacturer to the user. This information includes the identity of the chemical, its health hazards or carcinogenicity,

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physical, and chemical properties, physical and health hazards, routes of entry and exposure limits; precautions and engineering controls, first aid procedures, date of preparation, and manufacturer's name, address, and phone number.

Employees are not allowed to use any hazardous chemical for which there is no MSDS on file. An MSDS provides information needed to ensure that proper protective measures are implemented prior to exposure.

Departments that may manufacture hazardous chemicals have developed MSDSs for them. One example of "manufacturing" may be in the pharmacy when drugs are combined to form new agents. For untested mixtures, it is acceptable to staple together the MSDSs for each of the hazardous ingredients to represent the MSDS for the whole mixture.

A file has been compiled in each department containing an MSDS for every hazardous chemical that is used in that department. A master MSDS file of the facility's hazardous chemicals is maintained by the Hazard Communication Officer and is kept in \_\_\_\_\_

When a chemical does not have an MSDS, the department head orders one from the manufacturer with the record of request kept in the files of the Hazard Communication Plan. A copy of the MSDS is sent to the Hazard Communication Officer. If the manufacturer or distributor does not send an MSDS, it is the department head's responsibility to discontinue using the chemical.

The MSDS files must be complete as they are used as a primary source of information during employee training. The MSDS files are immediately available to all employees during work hours and are kept in notebooks in the work areas.

Department heads or their appointees are responsible for cross-checking the MSDSs sent by the manufacturer to determine if the chemical is hazardous and if it is a

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chemical the department uses or a duplicate of an already existing MSDS.

Department heads or their appointees are responsible for looking over new MSDSs to check for obvious inaccuracies and writing to the manufacturer to request a corrected MSDS when an inaccuracy is found. Inaccurate MSDSs are never changed or added to at this facility. Inaccuracies checked for include:

1. Blank entries
2. No revision date
3. An MSDS using OSHA Form 20 (an obsolete form)
4. The, identity not the same as on the label  
"Not" stating whether or not it is a carcinogen, (N/A is not acceptable)
6. Lack of complete health hazard information

(OSHA found 90 percent of a sampling of MSDSs they looked at were inadequate.)

Areas with chemical emissions from welding operations, motor emissions, vehicle bay exhaust, dental labs, etc., have an MSDS also. Employee exposure to any air emissions that are created in the facility are accounted for.

## **E. Employee Information and Training**

The use of labels and MSDSs is only successful when workers understand how to use this information to avoid or minimize exposure and the occurrence of adverse effects.. Training is critical in an effective hazard communication program. All workers who may be exposed to hazardous chemicals under normal conditions or foreseeable emergencies must be trained. Employees such as office workers who encounter hazardous chemicals only in non-routine, isolated instances are not covered. However, if there is some question as to whether an employee has a potential for exposure, he/she is included in the training.

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At the time of assignment, training is provided by the employee's supervisor on tasks in which hazardous chemicals are used and is provided again whenever a new hazard is introduced to the work area. Training is tailored to the educational and language level of the employee, and is offered during the normal work shift. The training is interactive and covers the following

1. The requirements of the Hazard Communication Standard are reviewed: what it is and what it does for them (i.e., it ensures that the hazards of all chemicals produced are evaluated, and that information concerning these hazards is communicated to employers and employees via labeling, MSDSs, and training)
2. The purpose location, and use of MSDSs are explained and an MSDSs categories and some of its terms are explained with an emphasis on the information an employee needs to know for protection.
3. The correct way to interpret a label is taught, which enables workers to modify their handling of a chemical accordingly. This section includes an analysis of the different varieties of labels such as all text, numerically-coded/colored, and pictures of hazards. See Appendix C for more information on labels.
4. A review is given of this facility's Written Hazard Communication Plan and of its documentation of compliance with the Hazard Communication Standard, including where to find the Plan.
5. The specific hazardous chemicals in their work area are explained. This is the largest section of the training program and includes:
  - a. Specific details on what chemicals the employees have contact with, and how to safely handle those chemicals. The MSDSs of chemicals in their department and chemicals

they may encounter are reviewed for information and discussed. These chemicals include **those** in unlabeled pipes. Chemicals may be broken down by groups for discussion in order to save time and avoid repetition.

- b. How to detect the presence or release of the chemical (visual appearance, odor, or monitoring devices).
  - c. Complete description of the physical and health hazards of the chemicals in the work area.
- 6. Proper use of protective equipment is explained and questions are answered. The supervisor demonstrates how to use the equipment, clearly explains when it is to be used, and discloses where the equipment is kept and the facility's policy regarding its use. If an employee does not use required equipment and suffers an injury, the facility is responsible for not enforcing its use. The Hazard Communication Officer determines if the proper safety precautions are being used when hazardous materials are present and the supervisor orders equipment that is needed to safely handle any hazardous materials in the department.
  - 7. An explanation is given of first aid and emergency procedures to be used in the event of exposure or overexposure to hazardous chemicals employees work with. The employees are reminded that this information can be found on MSDSs.
  - 8. Documentation of which employees have received training and when they received it is taken care of by a certification form that employees sign after the training. See Appendix D.
  - 9. The OSHA's Subpart Z, Toxic and Hazardous Substances, requires special consideration for some chemicals. For more information see Appendix B.

Any other books or materials the instructor feels are useful including a chemical dictionary may be used to answer employee's questions. The instructor may use handouts, diagrams, or chalkboards to convey the information.

Contractors are informed by the \_\_\_\_\_ (8) of chemical hazards that they are likely to encounter in the normal course of their work.

Employees assigned non-routine tasks are trained by their supervisor before they are allowed to work at that task. The employees are-told the chemical hazards associated with the tasks to be performed and the appropriate-protective measures they must take.

## **F. Chemical Hygiene Plan**

Our regulated laboratory has developed a written plan of action that outlines how employees are being protected from the health hazards of chemicals they work with. This Chemical Hygiene-Plan (CHP) is made available to employees as well as to OSHA.

The CHP includes:

1. Standard operating procedures to be followed when handling hazardous chemicals.
2. Criteria that will be used to determine and implement control measures to reduce employee exposure to hazardous chemicals, particularly those 'chemicals that are extremely hazardous.

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A requirement that fume hoods and other protective, equipment are functioning properly.

4. Provisions for employee training.
5. Circumstances under which a particular lab operation, procedure, or activity requires prior approval from the employer before implementation.
6. Provisions for medical consultation and medical examinations.
7. Designation of personnel in charge of implementation of CHP.
8. Provisions for additional employee protection for work with particularly hazardous substances, such as carcinogens, reproductive toxins, etc.

The \_\_\_\_\_ (9) reviews and evaluates the effectiveness of the CHP annually and updates it as necessary.

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Subpart Z  
Toxic and Hazardous Substances  
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The facility has specific health standards for all of the following chemicals. The standards may include special handling methods, protective clothing, and specific label requirements.

Sections

- 1910.1000 Air Contaminants.
- 1910.1001 Asbestos, Tremolite, Anthophyllite, and Actinolite.
- 1910.1002 Coal tar pitch volatiles; interpretation of term.
- 1910.1003 4. Nitrobiphenyl.
- 1910.1004 alpha-Naphthylamine.
- 1910.1006 Methyl chloromethyl ether.
- 1910.1007 3,3'-Dichlorobenzidine (and its salts).
- 1910.1008 bis-Chloromethyl ether.
- 1910.1009 beta-Naphthylamine.
- 1910.1010 Benzidine.
- 1910.1011 4-Aminodiphenyl.
- 1910.1012 Ethyleneimine.
- 1910.1013 beta-Propiolactone.
- 1910.1014 2-Acetylaminofluorene
- 1910.1015 4-Dimethylaminoazobenzine.
- 1910.1016 N-Nitrosodimethylamine.
- 1910.1017 Vinyl Chloride.
- 1910.1018 Inorganic arsenic.
- 1910.1025 Lead.
- 1910.1028 Benzene.
- 1910.1029 Coke Oven Emissions..
- 1910.1043 Cotton dust.
- 1910.1044 1,2-Dibromo-3-chloropropane.
- 1910.1045 Acrylonitrile.
- 1910.1047 Ethylene oxide.
- 1910.1101 Asbestos (see also 1910.1001)

(4/14/94)



FACILITY LABELING SYSTEM

(Provide examples of approved labeling systems used in your facility.)

(4/14/94)

Appendix D  
IHS Circular No. 94-2

## EMPLOYEE TRAINING CERTIFICATION

Department

Date

[illegible]

(4/14/94)

CHEMICALS ESTABLISHED AS HAZARDOUS

ACCORDING TO THE OSHA HAZARD COMMUNICATION STANDARD (1910.1200), A HAZARD DETERMINATION MUST CONSIDER THE CHEMICALS LISTED IN THE FOLLOWING SOURCES TO BE HAZARDOUS:

- 0     CHEMICALS REGULATED BY OSHA IN 29 CFR PART 1910, SUBPART z.
- 0     THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORK ENVIRONMENT, AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (LATEST EDITION).
- a     NATIONAL TOXICOLOGY PROGRAM, ANNUAL REPORT ON CARCINOGENS (LATEST EDITION).
- a     INTERNATIONAL AGENCY FOR RESEARCH ON CANCER MONOGRAPHS (LATEST EDITION).

APPENDIX E LISTS THE CHEMICALS FOUND IN THE ABOVE SOURCES. THE LIST WAS COMPILED AND PUBLISHED BY THE VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY, DIVISION OF OCCUPATIONAL HEALTH, IN SEPTEMBER 1985.

THE FACT THAT A CHEMICAL IS NOT LISTED IN THIS APPENDIX DOES NOT MEAN IT IS NOT HAZARDOUS. ANY CHEMICAL THAT PRESENTS A POTENTIAL HEALTH OR PHYSICAL HAZARD TO WHICH EMPLOYEES MAY BE EXPOSED MUST BE INCLUDED IN THE HAZARD COMMUNICATION PROGRAM.

Appendix E  
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<u>CHEMICAL 'NAME</u>	<u>CHEMICAL NAME</u>
ACETALDEHYDE	ARSENIC AND CERTAIN ARSENIC COMPOUNDS
ACETIC ACID	ARSENIC TRIOXIDE PRODUCTION
ACETIC ANHYDRIDE	ARSINE
2-ACETOAMINOFLUORENE	ASBESTOS
ACETONE	ASBESTOS (DUSTS)
ACETONITRILE	ASPHALT (PETROLEUM) FUMES
ACETYLENE	ATRAZINE
ACETYLENE DICHLORIDE	AURAMINE
ACETYLENE TETRABROMIDE	S-AZACYTIDINE
ACETYSALICYLIC ACID (ASPIRIN)	AZASERINE
ACROLEIN	AZATHIOPRINE
ACRYLAMIDE	AZINPHOS-METHYL
ACRYLIC ACID	B-PROPIOLACTONE
ACRYLONITRILE	BARIUM, SOLUBLE COMPOUNDS
ACTINOMYCIN C*	BAYTEX
AFLATOXINS	BENOMYL
ALDRIN	BENZ (A) ANTHRACENE
ALLYL ALCOHOL	BENZENE
ALLYL CHLORIDE	BENZIDINE AND ITS SALTS
ALLYL GLYCIDYL ETHER (AGE)	BENZ0 (A) PYRENE
ALLYL PROPYL DISULFIDE	BENZ0 (B) FLUORANTHENE
ALUMNA	BENZOTRICHLORIDE
ALUMINUM ALKYLs	BENZOYL PEROXIDE
ALUMINUM METAL OXIDE	BENZYL CHLORIDE
ALUMINUM PYRO POWDERS	BENZYL VIOLET 48
ALUMINUM SOLUBLE SALTS	BERYL ORE
ALUMINUM WELDING FUMES	BERYLLIUM AND CERTAIN BERYLLIUM COMPOUNDS
3-AMINO 1,2,4-TRIAZOLE	BERYLLIUM OXIDE
1-AMINO-2METHYLANTHRAQUINONE	BIPHENYL
2-AMINO-5-(S-NITRO-2-FURYL)-1,3,4-THIADIAZOLE 815	(CHLOROETHYL) ETHER
2-AMINO-S-NITROTHIAZIDE	BIS-CHLOROMETHYL ETHER
2-AMINOANTHRAQUINONE	BISCHLOROETHYL NITROSOUREA
4-AMINOBIPHENYL	BISMUTH TELLURIDE
2-AHINOETHANOL	BISMUTH TELLURIDE (SE-DOPED)
2-AMINOPYRIDINE	BORATES, TETRA, SODIUM (SALTS)
AMITROLE	BORATES, TETRA, SODIUM DECAHYDRATE

AMMONIA

AMMONIUM CHLORIDE FUME  
AMMONIUM SULFAMATE  
AMOSITE  
ANILINE  
ANILINE HYDROCHLORIDE  
ANISIDINE (O,P-ISOMERS)  
ANTHOPHYLITE  
ANTIMONY AND COMPOUNDS  
ANTIMONY TRIOXIDE, HANDLING & USE  
ANTIMONY TRIOXIDE, PRODUCTION  
ANTU  
ARAMITE  
ARGON  
ARSENIC & SOLUBLE COMPOUNDS  
BUTYL MERCAPTAN  
BUTYLAMINE

B-BUTYROLACTONE

CADMIUM  
CADMIUM CHLORIDE  
CADMIUM OXIDE  
CADMIUM OXIDE, FUME AS CD  
CADMIUM OXIDE, PRODUCTION

CADMIUM SULFIDE  
CALDIUM CARBONATE/MARBLE  
CALCIUM CYANAMIDE  
CALCIUM CYCLAMATE  
CALCIUM HYDROXIDE  
CALCIUM OXIDE  
CALCIUM SILICATE  
CAMPHOR, SYNTHETIC  
CAPROLACTAM, DUST  
CAPROLACTAM, VAPOR  
CAPTAFOL  
CAPTAN  
CARBARYL  
CARBOFURAN  
CARBON BLACK  
CARBON DIOXIDE  
CARBON DISULFIDE  
CARBON MONOXIDE  
CARBON TETRABROMIDE

BORATES, TETRA, SODIUM  
PENTAHYDRATE

BORON OXIDE  
BORON TRIBROMIDE  
BORON TRIFLUORIDE  
BROMACIL  
BROMINE  
BROMINE PENTAFLUORIDE  
BROMOCHLOROMETHENE  
BROMOFORM  
1,3-BUTADIENE  
BUTANE  
BUTANETHIOL  
2-BUTANONE  
2-BUTOXYETMANOL  
BUTYL ACRYLATE  
CHLOROBENZILATE  
0-CHLOROBENZYLIDENE  
MALONONITRILE  
CHLOROBROMOMETHANE  
CHLORODIFLUOROMETHANE  
CHLORODIPHENYL (42%) CHLORINE  
CHLORODIPHENYL (54% CHLORINE)  
2-CHLOROETHANOL  
1-(2-CHLOROETHYL).3-  
CYCLOHEXYL-1-NITROSOUREA  
CHLOROETHYLENE  
CHLOROFORM  
CHLOROMETHYL METHYL ETHER  
CHLOROPENTAFLUROETHANE  
CHLOROPICRIN  
2-CHLOROPRENE  
0-CHLOROSTYRENE  
CHLOROTHALONIL  
0-CHLOROTOLUENE  
CHLORPYRIFOS  
CHOLESTEROL  
CHROMITE ORE PROCESSING  
CHROMIUM  
CHROMIUM (CALCIUM CHROMATE)  
CHROMIUM (II) COMPOUNDS  
CHROMIUM (III) COMPOUNDS  
CHROMIUM (VI) WATER INSOLUBLE  
CHROMIUM OXIDE  
CHROMIUM, (IV) COMPOUNDS WATER

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CARBON TETRACHLORIDE	CHROMIUM, METAL
CARBONYL CHLORIDE	CHROMYL CHLORIDE
CARBONYL FLUORIDE	CHRYSENE
CATECHOL (PYROCATECHOL)	CHRYSOTILE
CELLULOSE (PAPER FIBER)	CHRYSOTILE - DUST
CESIUM HYDROXIDE	CINNAMYLANTHRANILATE
CHLORAMBUCIL	CISPLATIN
CHLORDANE	CITRUS RED NO. 2
CHLORDECONE (KEPONE)	CLOFIBRATE
CHLORINATED CAMPHENE	CLOPIDOL
CHLORINATED DIPHENYL OXIDE	COAL TAR PITCH VOLATILES
CHLORINE	COBALT CARBONYL
CHLORINE DIOXIDE	COBALT HYDROGARBONYL
CHLORINE TRIFLUORIDE	COBALT, METAL, DUST & FUME
CHLORMADINONE ACETATE	COPPER
1-CHLORO, 2, 3-EPOXY-PROPANE (EPICHLOROHYDRIN)	COTTON DUST, RAW
2-CHLORO-1, 3-BUTADIENE	CRESOL, ALL ISOMERES
1-CHLORO-1-NITROPROPANE	CROCIDOLITE
2-CHLORO-6-(TRICHLOROMETHYL) PYRIDINE	CROCIDOLITE - DUST
4-CHLORO-ORTHO-PHENYLENEDIAMINE	CROTONALDEHYDE
CHLOROACETALDEHYDE	CRUFOMATE
2-CHLOROACETOPHENONE	CUMENE
CHLOROACETYL CHLORIDE	CUPERFERRON
CHLOROBENZENE	CYANAMIDE
CYANOGEN	3,3' DICHLOROBENZIDINE AND ITS DIHYDROCHLORIDE
CYANOGEN CHLORIDE	DICHLORODIFLUOROMETHANE (FLUROCARBON 12)
CYCASIN	DICHLORODIPHENYL- TRICHLOROETHANE
CYCLAMATES	1,1-DICHLOROETHANE
CYCLOHEXANE	1,2-DICHLOROETHANE
CYCLOHEXANOL	DICHLOROETHYL ETHER
CYCLOHEXANONE	1,1-DICHLOROETHYLENE
CYCLOHEXENE	1,2=DICHLOROETHYLENE
CYCLOHEXLAMINE	DICHLOROFLUROMETHANE
CYCLONITE	DICHLOROMETHANE (METHYLENE CHLORIDE)
CYCLOPENTADIENE	1,2-DICHLOROPROPANE
CYCLOPENTANE	DICHLOROPROPENE
CYCLOPHOSPHAMIDE	2,2-DICHLOROPROPIONIC ACID
CYHEXATIN	DICHLOROTETRAFLUROETHANE
2,4-D DICHLOROPHENOXY ACETIC ACID	DICHLORVOS
D2-NAPHTHYLAMINE	DICOFOL

DACARBAZINE	DICROTOPHOS
DAPSONE	DICYCLOHEXYLAMINE
DAUNOMYCIN	DICYCLOPENTADIENE
DDT AND ASSOCIATED SUBSTANCES	DICYCLOPENTADIENYL IRON
DECARBORANE	DIELDRIN
DEMETON	DIEPOXYBUTANE
DI-(20ETHYLHEXYL) ADIPATE	DIETHANOLAMINE
DI-(20ETHYLHEXYL) PHTHALATE	DIETHYL ETHER
DI-SEC, OCTYL PHTHALATE	DIETHYL KETONE
DIABENZ (A,H) ACRIDINE	DIETHYL PHTHALATE
DIACETONE ALCOHOL	DIETHYL SULFATE
DIALATE	DIETHYLAMINE
2,4-DIAMINOANISOLE & ITS SULFATE	DIETHYLAMIOETHANOL
4,4'-DIAMIODIPHENYL ETHER	DIETHYLENE TRIAMINE
1,2-DIAMINOETHANE	1,2=DIETHYLHYDRAZINE
2,4-DIAMIOTOLUENE	DIETHYLSTILBOESTROL
DIAZINON	DIETHYLSTILBOESTROL
	DIPROPIONATE
DIAZOMETHANE	DIFLUORODIBROMOMETHANE
DIBENZ (A,H) ACRIDINE	DIGLYCIDYL ETHER (DSG)
DIBENZ (A,H) ANTHRACENE	DIHYDROSAFROLE
DIBENZ (A,J) ACRIDINE	DIHYDROXYBENZENE
DIBENZO (A,E) PYRENE	DIISOBUTYL KETONE
DIBENZO (A,H) PYRENE	DIISOPROPYLAMINE
DIBENZO (A,I) PYRENE	3,3'-DIMETHOXYBENZIDINE
DIBENZO (C,G) CARBAZOLE	DIMETHOXYMETHANE
DIBORANE	DIMETHYL ACETAMIDE
1,2-DIBROMO-3-CHLOROPROPANE	DIMETHYL CARBAMYL CHLORIDE
1,2-DIBROMOETHANE	
(ETHYLENE DIBROMIDE)	DIMETHYL SULFATE
DIBUTYL PHOSPHATE	DIMETHYL-1,2-DIBROMO-2-
DICHLOROETHYL	PHOSPHATE
DIBUTYL PHTHALATE	2-6-DIMETHYL-4-HEPTANONE
1,1-DICHLORO-1-NITROETHANE	DIMETHYLAMINE
3,3'-DICHLORO-4,4'-DIAMINO-	
DIPHENYL ETHER	DIMETHYLAMIOBENZENE
1,3-DICHLORO-5,5-DIMETHYL	HYDANTOIN
DICHLOROACETYLENE	DIMETHYLANILINE
0-DICHLOROBENZENE	DIMETHYLBENZENE
DIMETHYLFORMAMIDE	3,3-DIMETHYLBENZIDINE
1,1-DIMETHYLHYDRAZINE	ETHYL ETHER
1,2-DIMETHYLHYDRAZINE	ETHYL FORMATE
DIMETHYLPHTHALATE	ETHYL MERCAPTAN
DINITOLMIDE	ETHYL METHANESULFONATE
DINITRO-0-CRESOL	ETHYL SILICATE
	ETHYLAMINE

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3,5-DINITRO-0-TOLUAMIDE  
DINITROBENZENE  
2,4 DINITROTOLUENE  
1,4-DIOXANE  
DIOXANE, TECH, GRADE  
DIOXATHION  
DIPHENYL  
ACETATE  
DIPHENYLAMINE

DIPHENYLMETHANE DIISOCYANATE  
DIPROPYL KETONE  
DIPROPYLENE GLYCOL METHYL ETHER  
DIQUAT  
DIRECT BLACK 38  
DIRECT BLUE 6  
DIRECT BROWN 95  
DISULFIRAM  
DISULFOTON  
2,6-DITERT, BUTYL-P-CRESOL  
DIURON  
DIVINYL BENZENE  
DYHYDROXYMETHYL FURATRIZINE  
EMERY  
ENDOSULFAN  
ENDRIN  
EPICHLOROHYDRIN  
EPICHLOROHYDRIN  
EPN  
2,3-EPOXY-1-PROPANOL  
1,2-EPOXYPROPANE

ETHANE  
ETHANETHIOL  
ETHANOL  
ETHANOLAMINE  
ETHINYLOESTRADIOL  
ETHION  
2-ETHOXYETHANOL  
2-ETHOXYETHYL ACETATE  
ETHYL ACETATE  
ETHYL ACRYLATE  
ETHYL ALCOHOL  
ETHYL AMYL KETONE  
ETHYL BENZENE  
ETHYL BROMIDE

ETHYLENE  
ETHYLENE CHLOROHYDRIN  
ETHYLENE DIBROMIDE  
ETHYLENE DICHLORIDE  
ETHYLENE GLYCOL (VAPOR)  
ETHYLENE GLYCOL DINITRATE  
ETHYLENE GLYCOL METHYL ETHER

ETHYLENE GLYCOL MONOMETHYL  
ETHER  
ETHYLENE OXIDE  
ETHYLENEDIAMINE  
ETHYLENEIMINE  
ETHYLENETHIOUREA  
ETHYLIDENE CHLORIDE  
ETHYLIDENE NORBORNENE  
ETHYNODIOL DIACETATE  
FENAMIPHOS  
FENSULFOTHION  
FENTHION  
FERBAM  
FERROVANADIUM DUST  
FIBROUS GLASS DUST  
FLUORIDES, AS F  
FLUORINE  
FLUOROTRICHLOROMETHANE  
FONOFOS  
FORMALDEHYDE  
FORMAMIDE  
FORMIC ACID  
2-(20FORMYLHYDRAZINO)-4-(5-  
NITRO-2-FURYL)THIAZOLE  
FURFURAL  
FURFURYL ALCOHOL  
GASOLINE  
GERMANIUM TETRAHYDRIDE  
GLUTARALDEHYDE  
GLYCERIN MIST  
GLYCIDALOEHYDE  
GLYCIDOL  
GLYCOL MONOETHYL ETHER  
GRAPHITE (NATURAL, SEE DUSTS)  
GRAPHITE (SYNTHETIC)  
GYPSUM  
GYROMITRIN  
HANIU



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ETHYL BUTYL KETONE	HELIUM
ETHYL CHLORIDE	HEPTACHLOR
HEPTANE (N-HEPTANE)	ISOPROPYL ACETATE
2-HEPTANONE	ISOPROPYL ALCOHOL
3-HEPTANONE	ISOPROPYL ETHER
HEXACHLOROBUTADIENE	ISOPROPYL GLYCIDYL ETHER
HEXACHLOROCYCLOHEXANE	ISOPROPYLAMINE
HEXACHLOROCYCLOPENTADIENE	KAOLIN
HEXACHLOROETHANE	KEPONE
HEXACHLORONAPHTHALENE	KETENE
HEXACHOROBENZENE	L.P.G. (LIQUIFIED PETROLEUM GAS)
HEXAFLUROACETONE	LASIOCARPINE
HEXAMETHYL PHOSPHORAMIDE	LEAD ACETATE
HEXANE (N-HEXANE)	LEAD ARSENATE, AS PB
HEXANE, OTHER ISOMERS	LEAD CHROMATE
2-HEXANONE	LEAD PHOSPHATE
HEXONE	LEAD SUBACETATE
HEXYLENE GLYCOL	LEAD, INORG., DUSTS & FUMES
HYDRALAZINE AND ITS HYDROCHLORIDE	LIMESTONE
HYDRAZINE	LINDANE
HYDRAZINE SULFATE	LITHIUM HYDRIDE
HYDRAZOBENENE	M-CRESOL
HYDROGEN	M-DINITROBENZENE
HYDROGEN BROMIDE	M-XYLENE
HYDROGEN CHLORIDE	M-XLENE 1,1-DIAMINE
HYDROGEN CYANIDE	MAGNESITE
HYDROGEN FLUORIDE	MAGNESIUM OXIDE FUME
HYDROGEN PEROXIDE	MALATHION
HYDROGEN SELENIDE	MALEIC ANHYDRIDE
HYDROGEN SULFIDE	MANGANESE CYCLOPENTADIENYL TRICARBONYL
HYDROGENATED TERPHENYLS	MANGANESE TETROXIXDE
HYDROQUINONE	MANGANESE, DUST & COMPOUNDS
4-HYDROXY-4-METHYL-2-PENTAONE	MANGANESE, FUME
2-HYDROXYPROPYL ACRYLATE	MARBLE/CALCIUM CARBONATE
INDENE	MEDROXYPROGESTERONE ACETATE
INDENO (1,2,3-CD )PYRENE	MEGESTROL ACETATE
INDIUM, COMPOUNDS	MELPHALAN
IODINE	MERCURY, ALKYL COMPOUNDS
IODOFORM	MERCURY, ARYL & INORGANIC COMPOUNDS
IRON OXIDE FUME	MERCURY, VAPOR
IRON PENTACARBONYL	MERPHALAN

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IRON SALTS	M E S I T Y L    O X I D E
IRON-DEXTRAN COMPLEX	MESTRANOL
ISOAMYL ACETATE	METHACRYLIC ACID
ISOAMYL ALCOHOL	METHANE
ISOBUTYL ACETATE	METHANETHIOL
ISOBUTYL ALCOHOL	METHOMYL
ISONICOTINIC ACID	METHOXSALEN
ISOOCTYL ALCOHOL	METHOXY-DDT
ISOPHORONE	METHOXYCHLOR
ISOPHORONE DIISOCYANATE	2-METHOXYETHANOL
ISOPHOSPHAMIDE	2-METHOXYETHYL ACETATE
ISOPROPOXYETHANOL	
4-METHOXYPHENOL	METRIBUZIN
METHYL 2-CYANOACRYLATE	MEVINPHOS
METHYL ACETATE	MICHLER'S KETONE
METHYL ACETYLENE	MIREX
METHYL ACETYLENE-PROPADIENE MIXTURE	
	MITOMYCIN C
METHYL ACRYLATE	MOCA
METHYL ALCOHOL	MOLYBDENUM
METHYL AMYL ALCOHOL	MOLYBDENUM, SOLUBLE COMPOUNDS
METHYL BROMIDE	MONOCROTALINE
METHYL CELLOSOLVE	MONOCROTOPHOS
METHYL CHLORIDE	MORPHOLINE
METHYL CHLOROFORM	5-(MORPHOLINOMETHYL)-3-((5-NITROFURFURYLIDENE)AMINO)-2-OXAZOLIDINONE
	MUSTARD GAS
METHYL DEMETON	MUSTARD OIL
METHYL ETHYL KEONE	N(4-(50NITRO-2-FURYL)-2-THIAZOLYL)ACETAMIDE
METHYL ETHYL KETONE PEROXIDE	N,N-BIS(2-CHLOROETHYL)-2-NAPHTHYLAMINE
METHYL FORMATE	N,N-DIACETYL BENZIDINE
	N,N-DIMETHYLANILINE
METHYL HYDRAZINE	N-AMYL ACETATE
	N-BUTYL ACETATE
METHYL IODIDE	N-BUTYL ALCOHOL
METHYL ISOAMYL KETONE	N-BUTYL GLYCIDYL ETHER (BSG)
METHYL ISOBUTYL CARBINOL	N-BUTYL LACTATE
METHYL ISOBUTYL KETONE	2-N-DIBUTYLAMINOETHANOL
METHYL ISOCYANATE	N-ETHYLMORPHOLINE
METHYL ISOPROPYL KETONE	N-ISOPROPYLANILINE
METHYL MERCAPTAN	N-METHYL ANILINE
METHYL METHACRYLATE	
METHYL METHANESULPHONATE	
METHYL N-AMYL KETONE	
METHYL N-BUTYL KETONE	

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METHYL PARATHION	N-METHYL-N-NITRO-N-NITROSOGUANIDINE
METHYL PROPYL KETONE	N-NITROSO-N-ETHYLUREA
METHYL SILICATE	N-NITROSO-N-METHYLUREA
METHYL STYRENE	N-NITROSO-N-METHYLURETHANE
2-METHYL-1-NITROANTHQUINONE	N-NITROSODI-N-BUTYLAMINE
5-METHYL-3-HEPTANONE	N-NITROSODI-N-PROPYLAMINE
50METHYL-C-ANISIDINE	N-NITROSODIETHANOLAMINE
METHYLACRYLONITRILE	N-NITROSODIETHYLAMINE
METHYLAL	N-NITROSODIMETHYLAMINE
METHYLAMINE	N-NITROSOMETHYLETHYLAMINE
2-METHYLAZIRIDINE	N-NITROSOMETHYLVINYLAMINE
METHYLAZOXYMETHANOL ACETATE	N-NITROSOMORPHOLINE
METHYLCYCLOHEXANE	N-NITROSONORNICOTINE
METHYCYCLOHEXANOL	N-NITROSOPIPERIDINE
METHYLCYCLOPENTADIENYL, MANGANESE	
TRICARBONYL	N-NITROSOPYRROLIDINE
4,4-METHYLENE BIS (20CHLOROANILINE)	N-NITROSOSARCOSINE
4,4'-METHYLENE BIS (20METHYL ANILINE)	N-PHENYL-BETA-NAPHTHYLAMINE
METHYLENE BIS (4 CYCLOHEXYLISOCYANATE)	N-PROPYL ACETATE
4,4'-METHYLENE BIS (N,N-DIMETHYL) BENZENAMINE	N-PROPYL NITRATE
METHYLENE BISPHENYL ISOCYANATE	NAFENOPIN
METHYLENE CHLORIDE	NALED
4,4-METHYLENE DIANILINE	NAPHTHALENE
METHYLTHIOURACIL	1,5=NAPHTHALENEDIAMINE
2-NAPHTHYLAMINE	ORTHO-TOLIDINE
NEON	ORTHO-TOLUIDINE AND ITS HYDROCHLORIDE
NICKEL AND NICKEL COMPOUND	OSMIUM TETROXIDE
NICKEL CARBONYL	OXALIC ACID
NICKEL HYDROXIDE	OXYGEN DIFLUORIDE
NICKEL OXIDE	OXYMETHOLONE
NICKEL SUBSULPHIDE	OZONE
NICKEL SULFIDE	P-ANISIDINE
NICKEL SULFIDE ROASTING, FUME & DUST	P-BENZOQUINONE
NICKEL, METAL	P-CRESIDINE
NICKEL, SOLUBLE COMPOUNDS	P-CRESOL
NICOTINE	P-DICHLOROBENZENE
NIRIDAZOLE	P-DINITROBENZENE

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N I T R A P Y R I N	P - N I T R O A N I L I N E
N I T R I C   A C I D	P - N I T R O C H L O R O B E N Z E N E
N I T R I C   O X I D E	P - N I T R O S O D I P H E N Y L A M I N E
N I T R I L O T R I A C E T I C   A C I D	P - P H E N Y L E N E   D I A M I N E
5 - N I T R O - 0 - A N I S D I N E	P - T E R T - B U T Y L T O L U E N E
5 - N I T R O - O R T H O - A N I S I D I N E	P - X Y L E N E
S - N I T R O A C E N A P H T H E N E	P A R A - B E N Z O Q U I N O N E   D I O X I M E
N I T R O B E N Z E N E	P A R A - C R E S I D I N E
2 , 4 = N I T R O D I P H E N Y L	P A R A - D I M E T H Y L A M I N O A Z O - B E N Z E N E
N I T R O E T H A N E	P A R A Q U A T
N I T R O G E N   D I O X I D E	P A R A T H I O N
N I T R O G E N   M U S T A R D   H Y D R O C H L O R I D E	P E N T A N E
N I T R O G E N   M U S T A R D   N - O X I D E   A N D	
I T S   H Y D R O C H L O R I D E	P E R C H L O R O M E T H Y L   M E R C A P T A N
N I T R O G E N   T R I F L U O R I D E	P E R C H L O R Y L   F L U O R I D E
N I T R O G L Y C E R I N	P E T A S I T E N I N E
N I T R O M E T H A N E	P H E N A C E T I N
1 - N I T R O P R O P A H E	P H E N A Z O P Y R I D I N E   ( 2 , 6 - D I A M I N O -
	3 - P H E N Y L A Z O P Y R I D I N E )
2 - N I T R O P R O P A N E	P H E N A Z O P Y R I D I N E   H Y D R O C H L O R I D E
N I T R O T O L U E N E	P H E N E L Z I N E   A N D   I T S   S U L F A T E
N O N A N E	P H E N O B A R B I T A L   A N D   I T S   S O D I U M
	S A L T
N O R E T H I S T E R O N E	P H E N O L
N O R E T H Y N O D R E L	P H E N O X Y B E N Z A M I N E
0 - C R E S O L	P H E N O X Y B E N Z A M I N E   H Y D R O C H L O R I D E
0 - M E T H Y L C Y C L O H E X A N O N E	P H E N Y L   C L Y C I D Y L   E T H E R
0 - S E C - B U T Y L P H E N O L	P H E N Y L   E T H E R
0 - T O L I D I N E	P H E N Y L H Y D R A Z I N E
0 - T O L U I D I N E	P H E N Y T O I N
0 - X Y L E N E	P H O S P H I N E
O C H R A T O X I N   A	P H O S P H O R I C   A C I D
O C T A C H L O R O N A P H T H A L E N E	P H O S P H O R U S   ( Y E L L O W )
O C T A N E	P H O S P H O R U S   P E N T A C H L O R I D E
O E S T R A D I O L - 1 7 B - A N D	
A S S O C I A T E D   C O M P O U N D S	P H O S P H O R U S   T R I C H O L O R I D E
O E S T R O N E	P H T H A L I C   A N H Y D R I D
O I L   O R A N G E   S S	P I C L O R A M
O R T H O - A N I N O A Z O T O L U E N E	P I C R I C   A C I D
O R T H O - A N I S D I N E   A N D	
I T S   H Y D R O C H L O R I D E	P I N D O N E
O R T H O - A N I S D I N E   H Y D R O C H L O R I D E	P I P E R A Z I N E   D I H Y D R O C H L O R I D E
O R T H O - D I A N I S I D I N E	2 - P I V A L Y L - 1 , 3 - I N D A N D I O N E

Appendix E  
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ORTHO-PHENYLPHENOL AND ITS SODIUM SALT	PLASTER OF PARIS
PLATINUM, SOLUBLE SALTS	SELENIUM COMPOUNDS
PLATINUM METAL	SELENIUM HEXAFLUORIDE
POLYBROMINATED BIPHENYLS	SELENIUM SULFIDE
POLYCHLORINATED BIPHENYLS	SENKIRKINE
POLYCHLORINATED BIPHENYLS (54% CHLORINE)	SESONE
POLYCHLOROBIPHENYLS (42% CHLORINE)	SILANE
POLYTETRAFLUOROETHYLENE, DECOMPOSITION PRODUCTS	SILICON
PONCEAU 3R	SILICON CARBIDE
PONCEAU MY	SILICON TETRAHYDRIDE
PORTLAND CEMENT	SILVER, METAL
POTASSIUM CYANIDE	SILVER, SOLUBLE COMPOUNDS
POTASSIUM HYDROXIDE	SODIUM 2,4- DICHLOROPHENOXYETHYL SULFATE
PROCARBAZINE	SODIUM AZIDE
PROCARBAZINE HYDROCHLORIDE	SODIUM BISULFITE
PROGESTERONE	SODIUM CYCLAMATE
PROPANE	SODIUM FLUOROACETATE
1,3-PROPANE SULTONE	SODIUM HYDROXIDE
PROPANE SULTONE	SODIUM METABISULFITE
PROPARGYL 'ALCOHOL	SPIRONOLACTONE
2-PROPIOLACTONE	STARCH
PROPIONIC ACID	STERIGMATOCYSTIN
PROPOXUR	STIBINE
PROPYL ALCOHOL	STODDARD SOLVENT
PROPYLENE	STREPTOZOTOCIN
PROPYLENE DICHLORIDE	STRYCHNINE
PROPYLENE GLYCOL DINITRATE	STYRENE
PROPYLENE GLYCOL MONOMETHYL ETHER	STYRENE, MONOMER
PROPYLENE OXIDE	SUBTILISINS
HROPYLENEIMINE	S U C R O S E
PROPYLTHIOURICIL	SULFALLATE
PROPYNE	SULFAMETHOXAZOLE
PYRETHRUM	SULFOTEP
PYRIDINE	SULFUR DIOXIDE
QUINONE	SULFUR HEXAFLUORIDE
'RDX	SULFUR MONOCHLORIDE
RESERPINE	SULFUR PENTAFLUORIDE
RESORCINOL	SULFUR TETRAFLUORIDE

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RHODIUM, INSOLUBLE COMPOUNDS, .AS RH	SULFURIC ACID
RHODIUM, SOLUBLE COMPOUNDS, AS RH	SULFURYL FLUORIDE
RHODIUM, METAL	SULPROFOS
RIFAMPICIN	SYSTOX
RONNEL	2,4,S-T (TRICHLOROPHENOXY ACETIC ACID)
ROSIN CORE SOLDER PYROLYSIS, AS FORMALDEHYDE *	TANTALUM
ROTENONE (COMMERCIAL)	TCDD
ROUGE	TEDP
RUBBER SOLVENT (NAPTHA)	TELLURIUM & COMPOUNDS
SACCHARIN	TELLURIUM HEXAFLUORIDE
SAFROLE	TEMEPHOS
SEC-AMYL ACETATE	TEPP
SEC-BUTYL ACETATE	TER-BUTYL ALCOHOL
SEC-BUTYL ALCOHOL	TERPHENYLS
SEC-HEXYL ACETATE	TERT-BUTYL ACETATE
TERT-BUTYL CHROMATE, AS CR03	TRIMETHYL PHOSPHITE
TESTOSTERONE AND ASSOCIATED COMPOUNDS	TRIMETHYLAMINE
1,1,2,2-TETRACHLORO-1,2- DIFLUOROETHANE	2,4,6=TRIMETHYLANILINE
1,1,1,2-TETRACHLORO-2,2- DIFLUOROETHANE	2,4,6=TRINITROPHENOL
TETRACHLORODIBENZO-PARA-DIOXIN	2,4,6=TRINITROPHENYL- METHYLNITRAMINE
1,1,2,2-TETRACHLOROETHANE	2,4,6-TRINITROTOLUENE (TNT)
TETRACHLOROETHYLENE	TRIOTHOCRESYL PHOSPHATE
TETRACHLOROMETHANE	TRIPHENYL AMINE
TETRACHLORONAPHTHALENE	TRIPHENYL PHOSPHATE
TETRACHLORUIN PHOS	TRIS(1-AZIRIDINYL) PHOSPHINE SULFIDE
TETRAETHYL LEAD	TRIS(2,3-DIBROMOPROPYL) PHOSPHATE
TETRAHYDROFURAN	TRIS(AZIRIDINYL)-PARA- BENZOQUINONE
TETRAMETHYL LEAD	TRP-P-1
TETRAMETHYL SUCCINONITRILE	TRP-P-2
TETRANITROMETHANE	TRYPAN BLUE
TETRASODIUM PYROPHOSPHATE	TUNGSTEN, SOLUBLE COMPOUNDS
TETRYL(2,4,6=TRINITROPHENYL- METHYLNITRAMINE)	TUNGSTEN, INSOLUBLE COMPOUNDS

THALLIUM, SOLUBLE COMPOUNDS  
THIOACETAMIDE  
4,4-THIOBIS(6-TERT,BUTYL-M-CRESOL)

4,4-THIODIANILINE  
THIOGLYCOLIC ACID  
THIOUREA

THIRAM  
THORIUM DIOXIDE  
TIN, ORGANIC COMPOUNDS  
TIN, OXIDE & INORGANIC COMPOUNDS  
TIN, METAL  
TITANIUM DIOXIDE  
TOLUENE  
TOLUENE-2, 4-DIISOCYANATE (TDI)  
TOXAPHENE  
TREOSULPHAN  
TRIBUTYL PHOSPHATE  
1,1,2-TRICHLORO-1,2,2-  
TRIFLUOROMETHANE  
TRICHLOROACETIC ACID  
1,2,4-TRICHLOROBENZENE

1,1,1-TRICHLOROETHANE  
1,1,2-TRICHLOROETHANE  
TRICHLOROETHYLENE  
TRICHLOROFLUOROMETHANE  
TRICHLOROMETHANE  
TRICHLORONAPHTHALENE  
TRICHLORONITROMETHANE  
TRICHLOROPHENOL  
1,2,3-TRICHLOROPROPANE  
TRICYCLOHEXYLTIN HYDROXIDE  
TRIETHYLAMINE  
TRIFLUOROBROMOMETHANE  
TRIHYDRATE  
TRIMELLITIC ANHYDRIDE  
TRIMETHYL BENZENE

TURPENTINE  
URACIL MUSTARD  
URANIUM (NATURAL), SOLUBLE &  
INSOLUBLE  
URETHANE  
VALERADEHYDE  
VANADIUM, RESPIRABLE DUST &  
FUME  
VEGETABLE OIL MISTS  
VINCRISTINE SULPHATE  
VINYL ACETATE  
VINYL BENZENE  
VINYL BROMIDE  
VINYL CHLORIDE  
VINYL CYANIDE  
VINYL CYCLOHEXENE DIOXIDE  
VINYL TOLUENE  
VINYLIDENE CHLORIDE  
VM & P NAPTHA

WARFARIN  
WELDING FUMES (NOC)  
WOOD DUST (CERTAIN HARD WOODS  
AS BEECH & OAK)  
WOOD DUST, SOFT WOOD  
XYLENE (O-M-, P-ISOMERS)  
XYLIDINE  
YTTRIUM  
ZEARALENONE  
ZINC CHLORIDE FUME  
ZINC CHROMATE  
ZINC OXIDE, FUME  
ZINC STEARATE  
ZIRCONIUM COMPOUNDS  
ZINC CHROMATE  
ZINC OXIDE, FUME  
ZINC STEARATE  
ZIRCONIUM COMPOUNDS